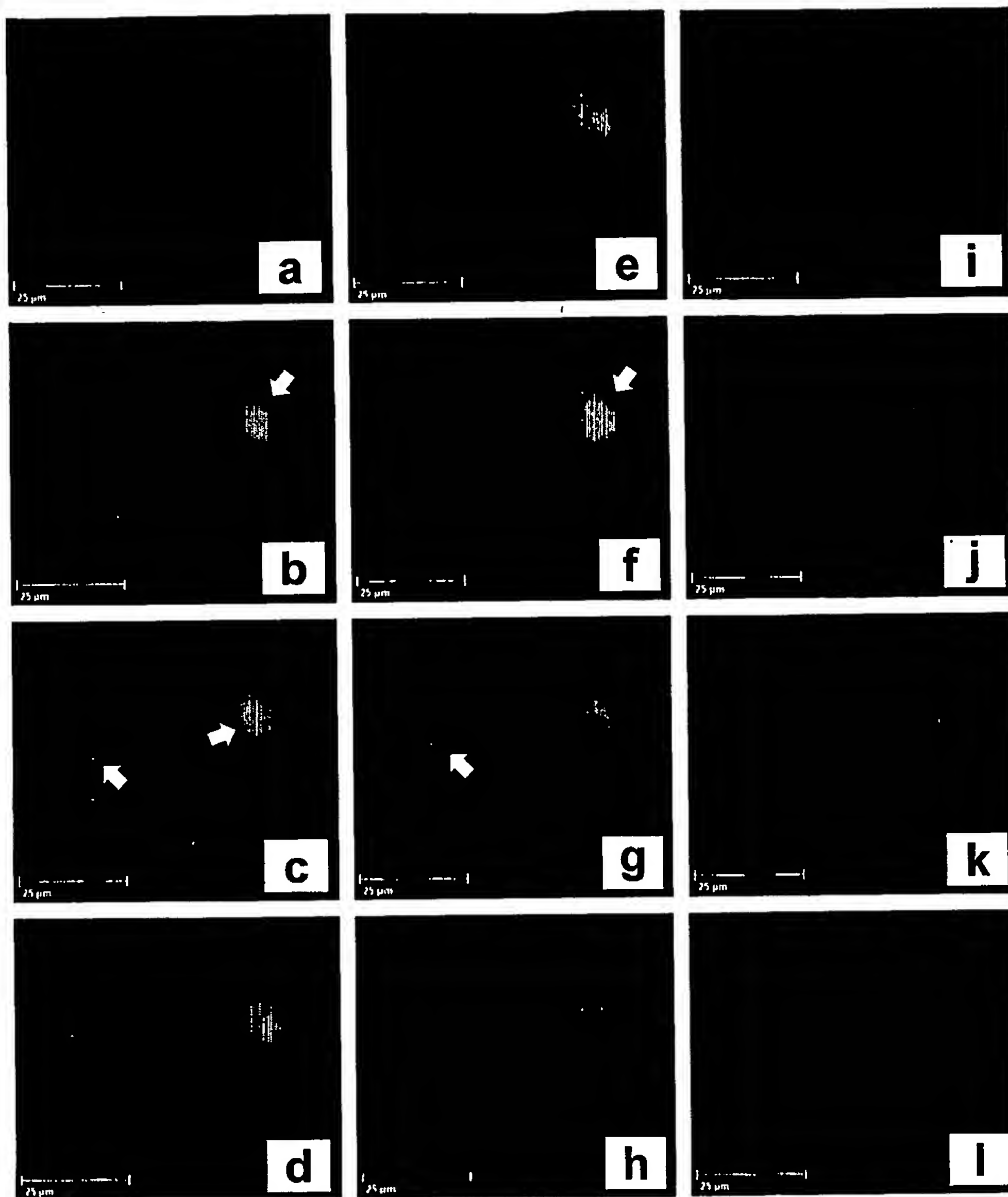
**FIG. 1**

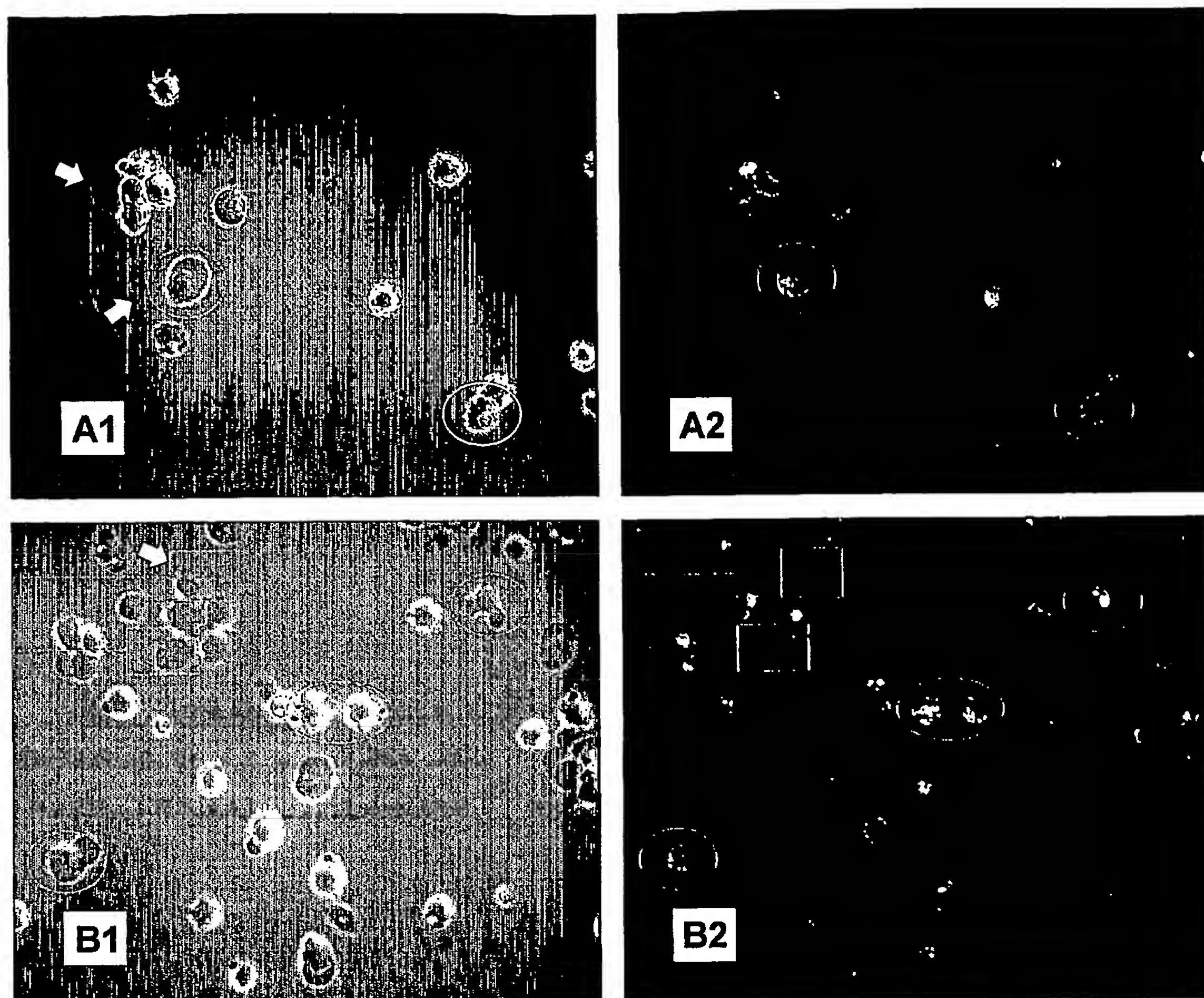
Basic morphological appearance of human myeloid dendritic cells (mDCs) during differentiation *in vitro*.

NOT AVAILABLE COPY



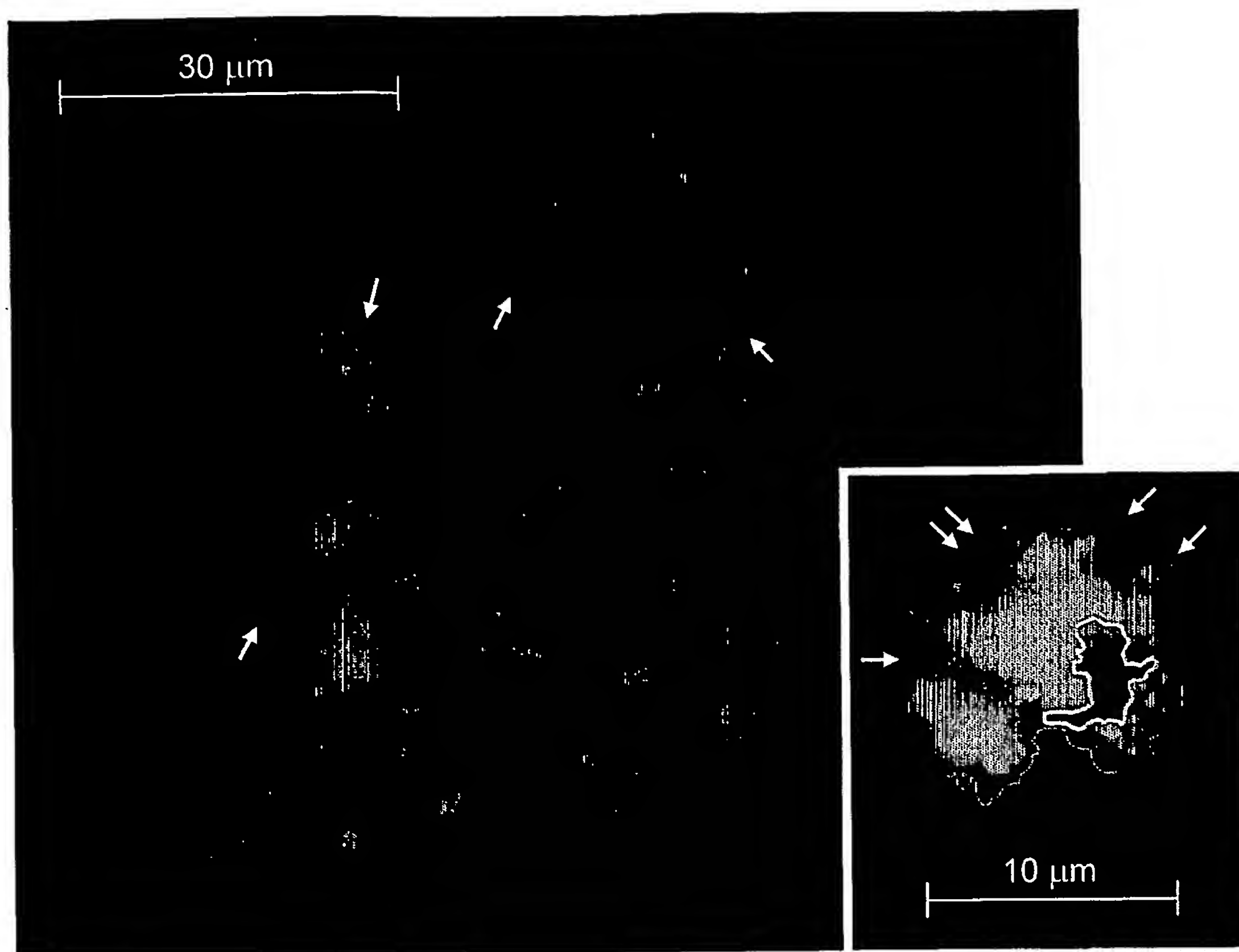
Serial Optical sections through immature myeloid dendritic cells (mDCs) targeted with *fucose-labeled* liposomes delivering the tracer dye calcein.

FIG. 2

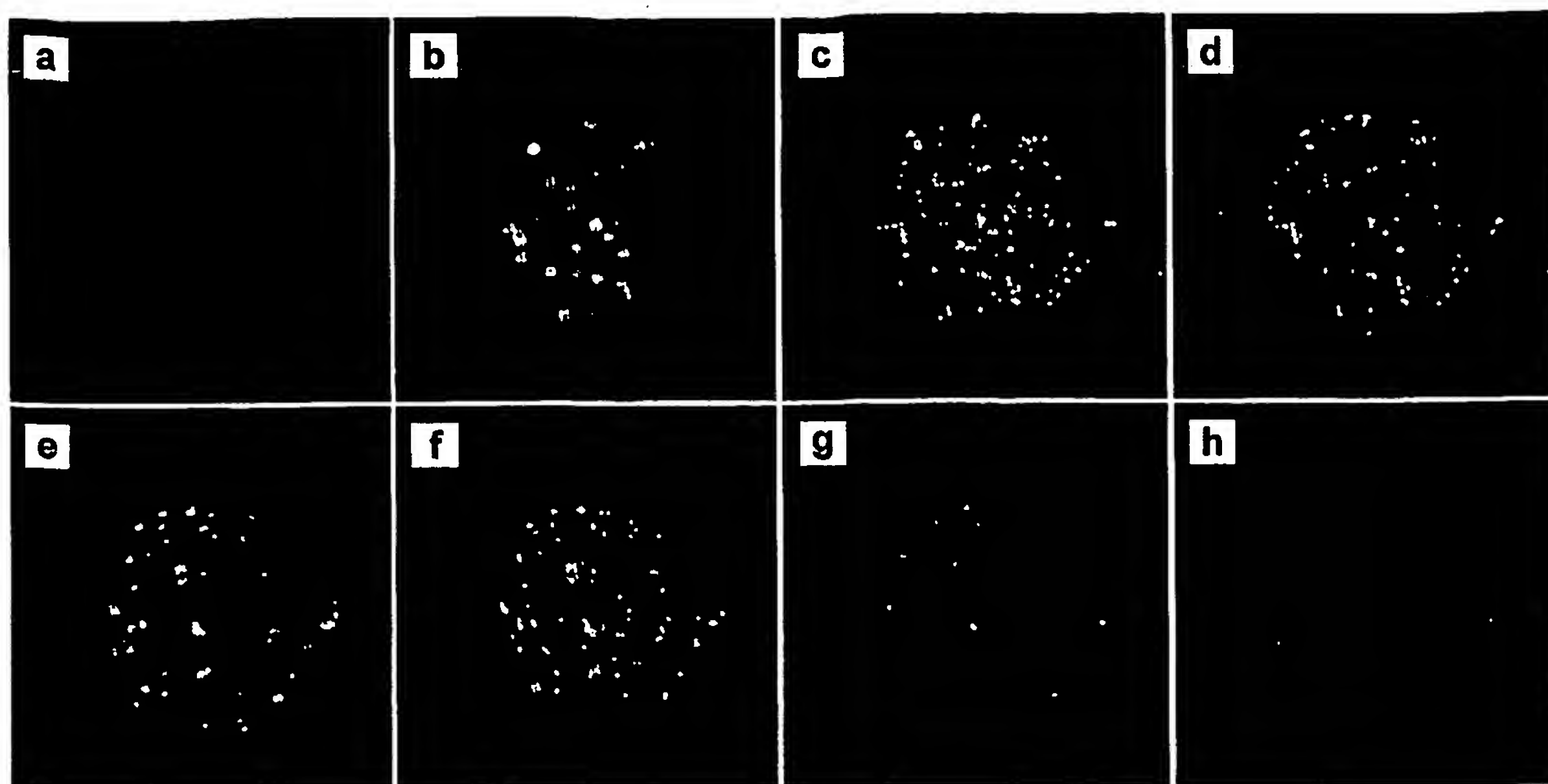


Binding and uptake of *mannose-labeled* liposomes by immature mDCs after 5 days of culture.

FIG. 3

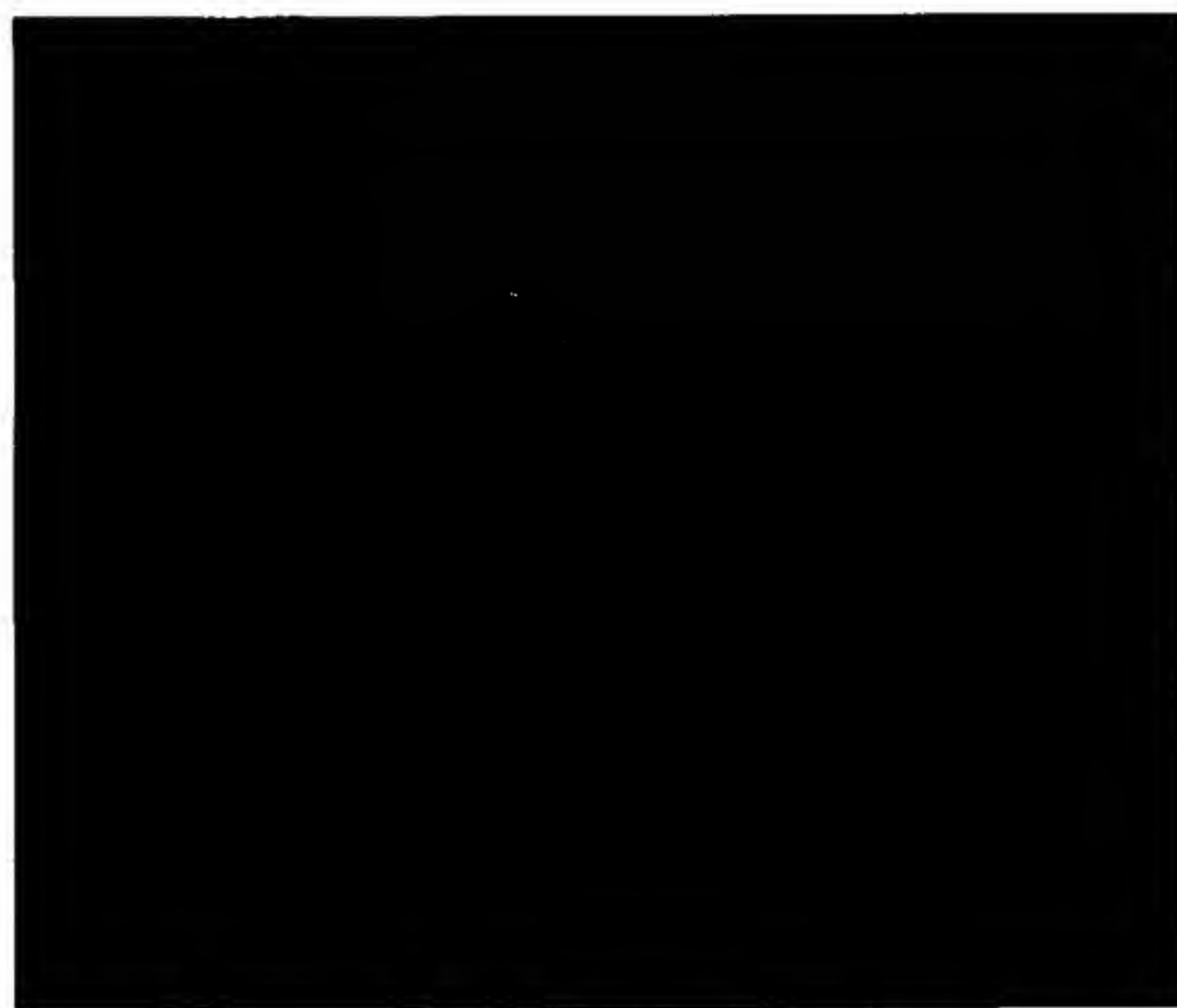
**FIG. 4**

C-type lectin-specific targeting of clustered mature mDCs.



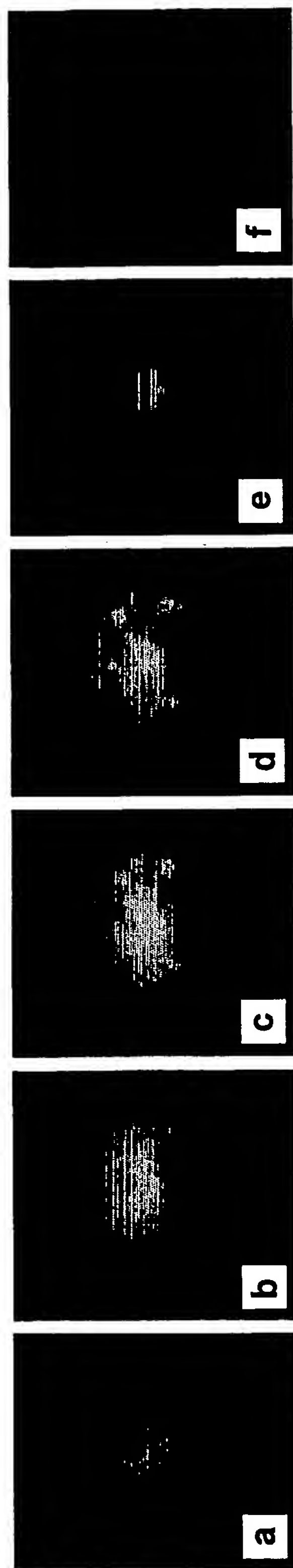
Binding and uptake of *fucose-labeled* liposomes by human macrophages after 7 days of culture.

FIG. 5



Color fluorescence photomicrograph of a representative macrophage from a different donor 2 hours after targeting with *fucose-labeled* liposomes.

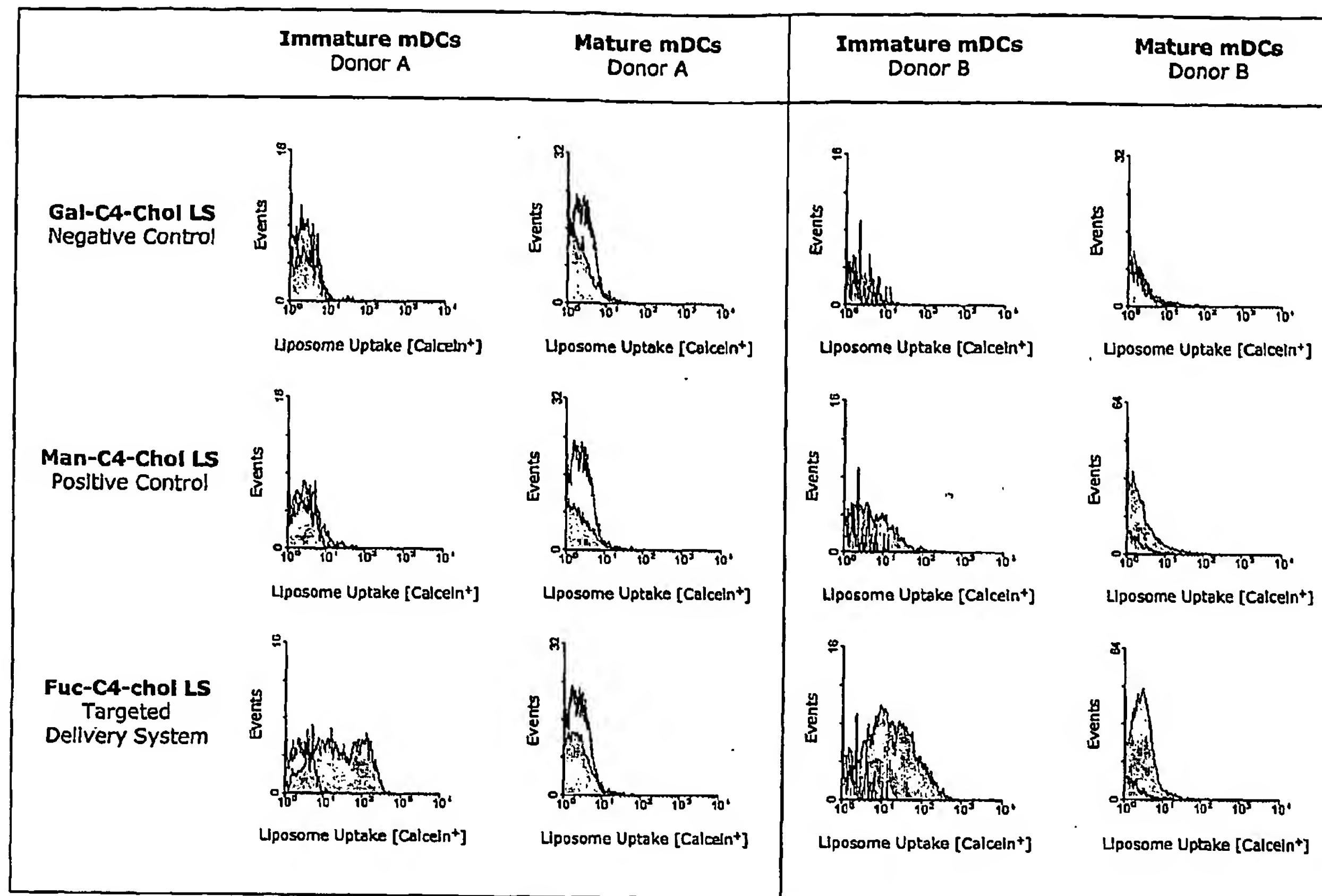
FIG. 6



Serial optical sections through a monocyte targeted with *Fuc-4C-Chol-labeled* liposomes delivering the tracer dye calcein.

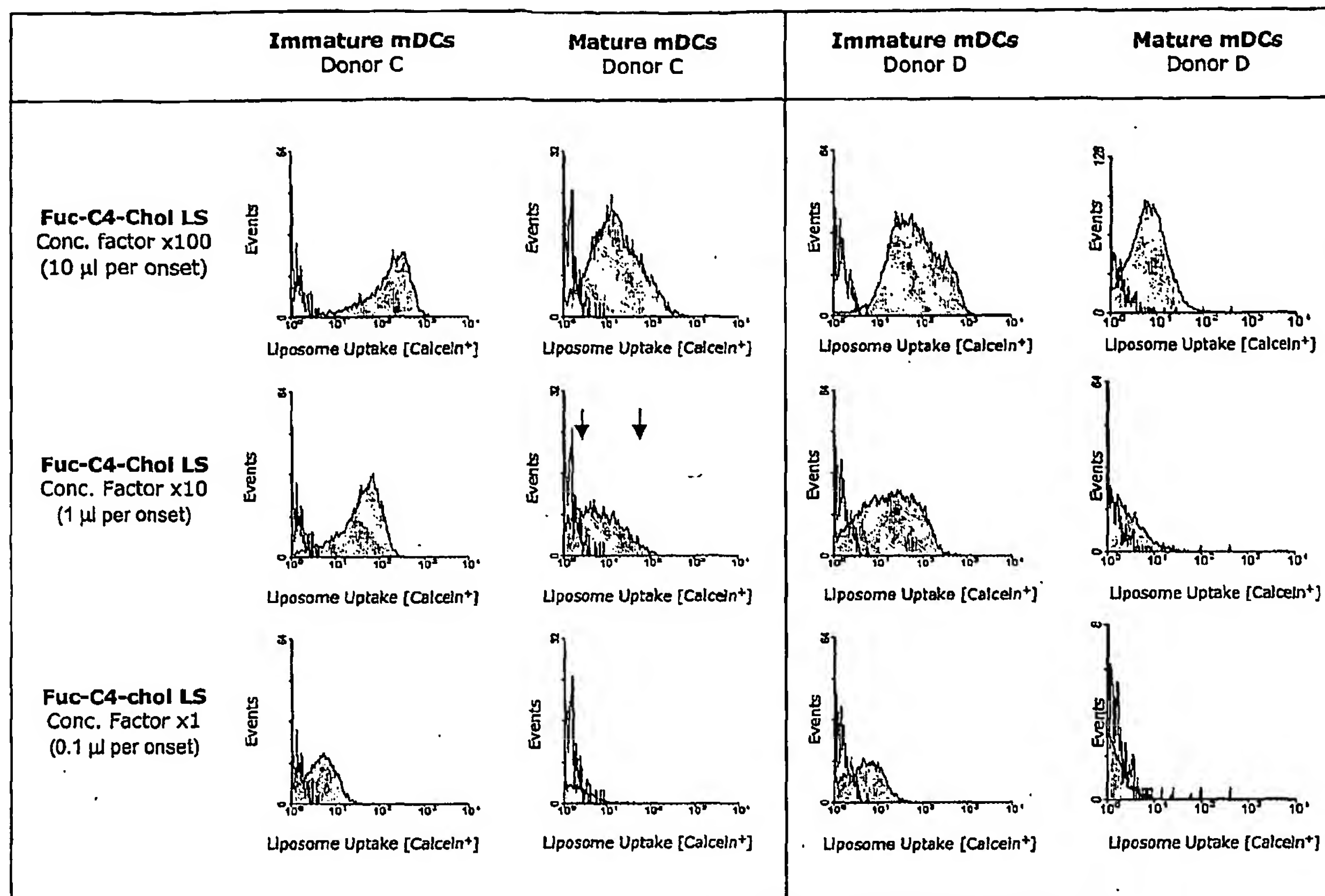
Fig. 7

7/13



The fucose-targeted compound delivery system is highly specific and has an extremely high targeting efficacy.

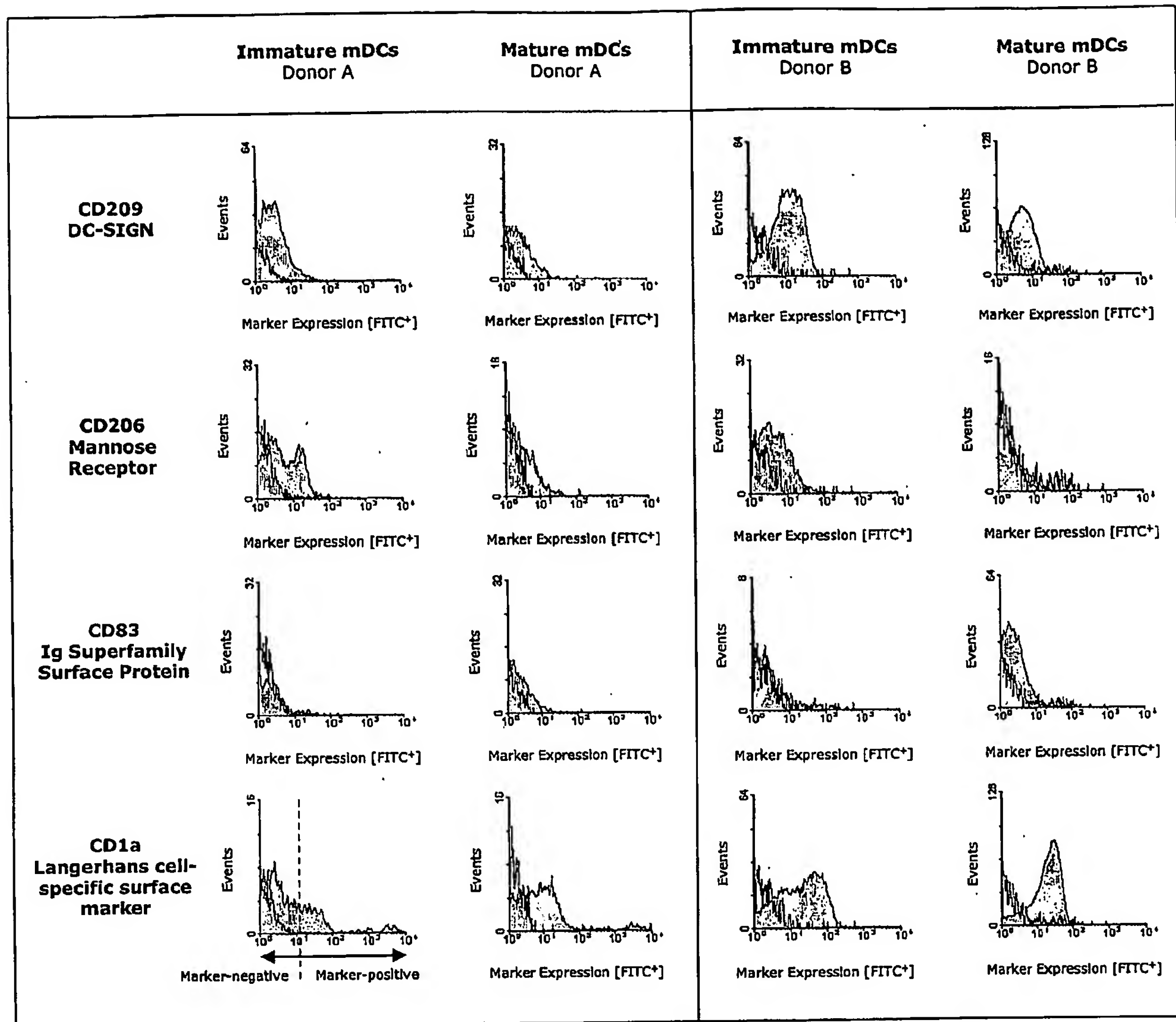
FIG. 8



Increased concentrations of fucose-labeled liposomes targets both immature and mature mDCs highly efficiently.

FIG. 9

9/13



Phenotyping of immature and mature myeloid dendritic cells.

FIG. 10

FIG. 11
Morphological changes in mDCs after 8-day culture of HIV-infected mDCs upon or without targeted treatment. I.
Culture appearance and homotypic mDC clustering.

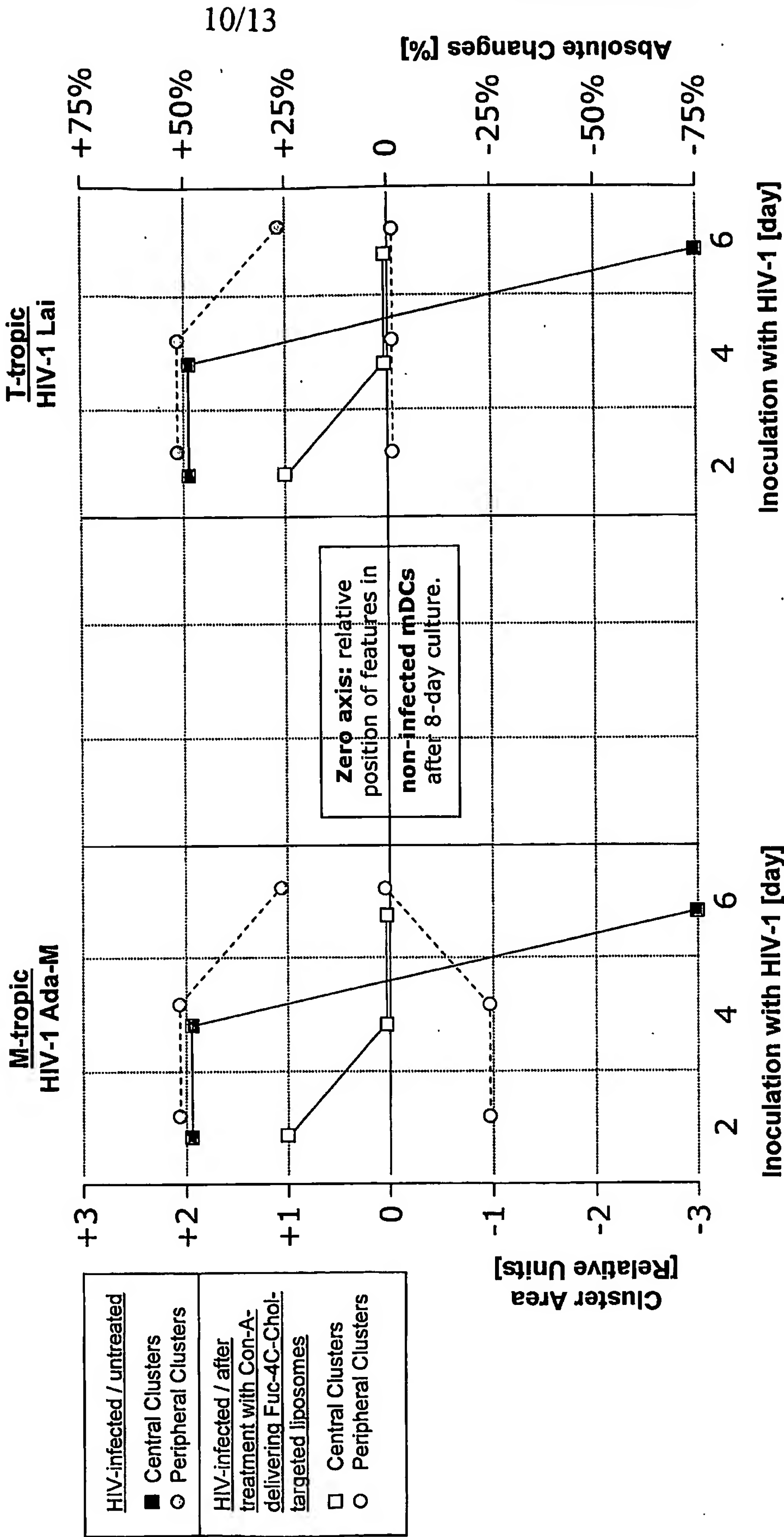
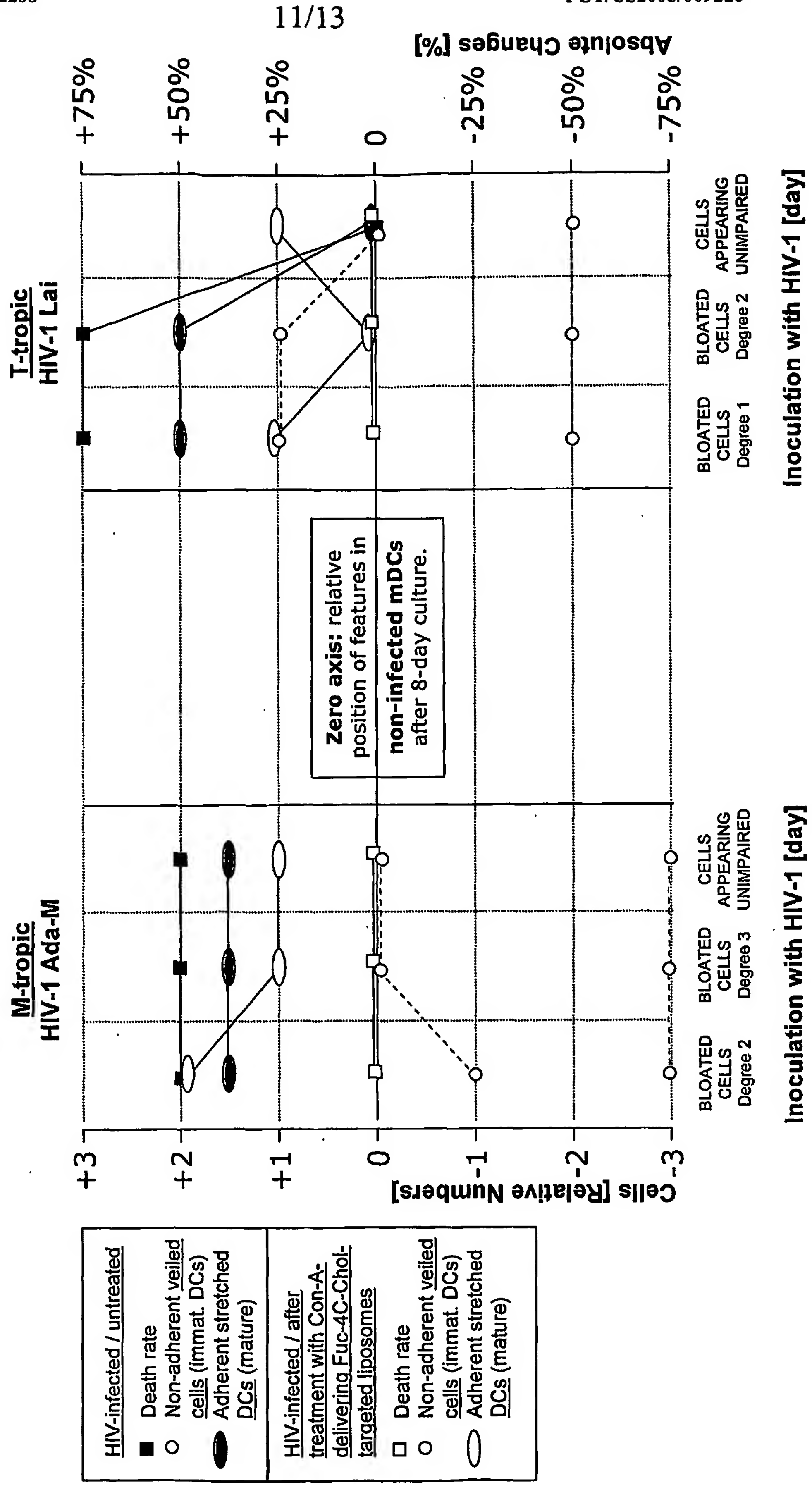


FIG. 12

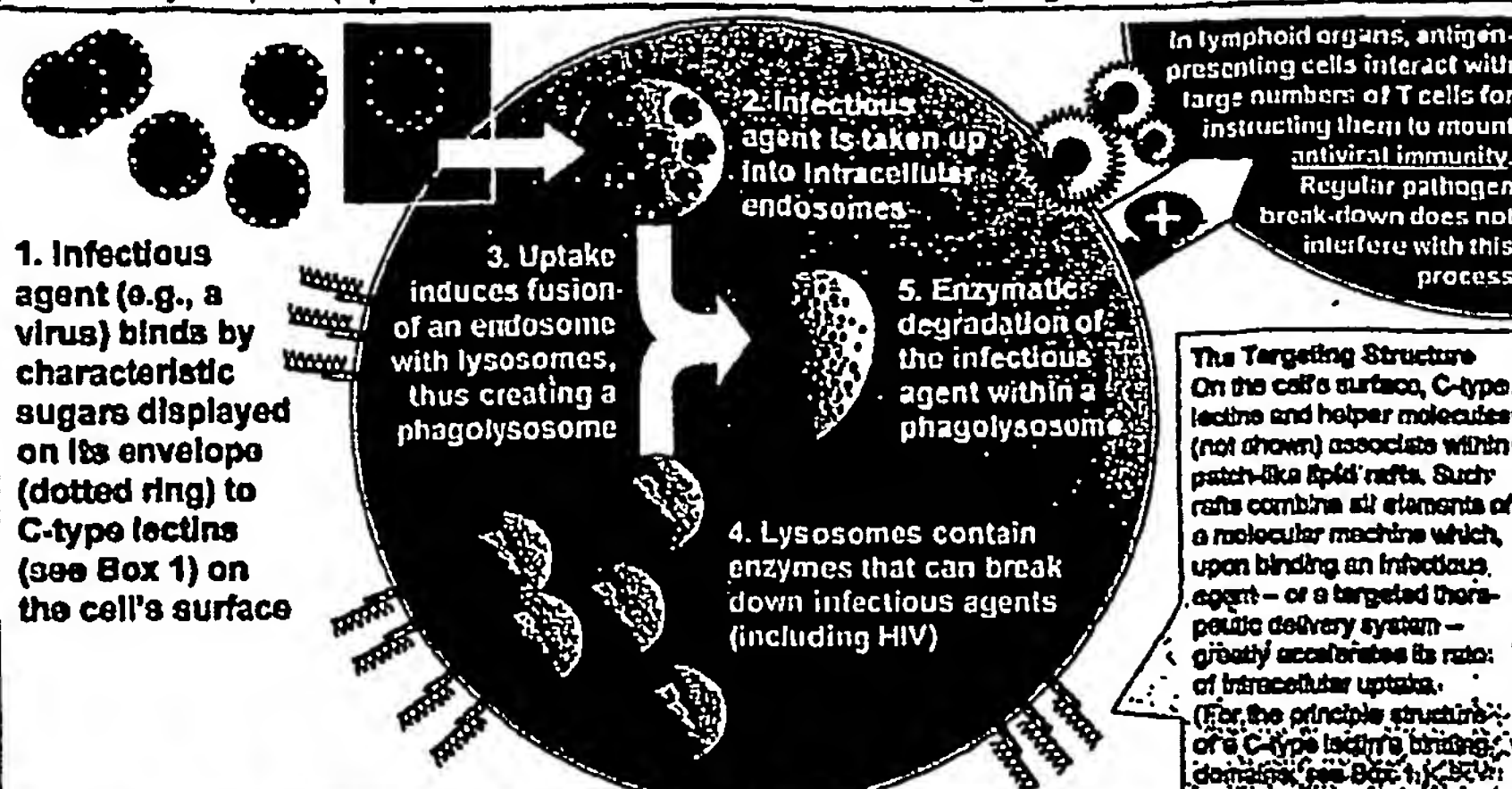
Morphological changes in mDCs after 8-day culture of HIV-infected mDCs upon or without targeted treatment. II. Types of mDCs and viability.



12/13

Fig. 13. (I) Normal Pathogen Elimination, (II) Evasion by HIV, and (III) The Inventive Carbohydrate-Lectin Targeting and Treatment System.**I. Normal Destruction of an Infectious Agent**

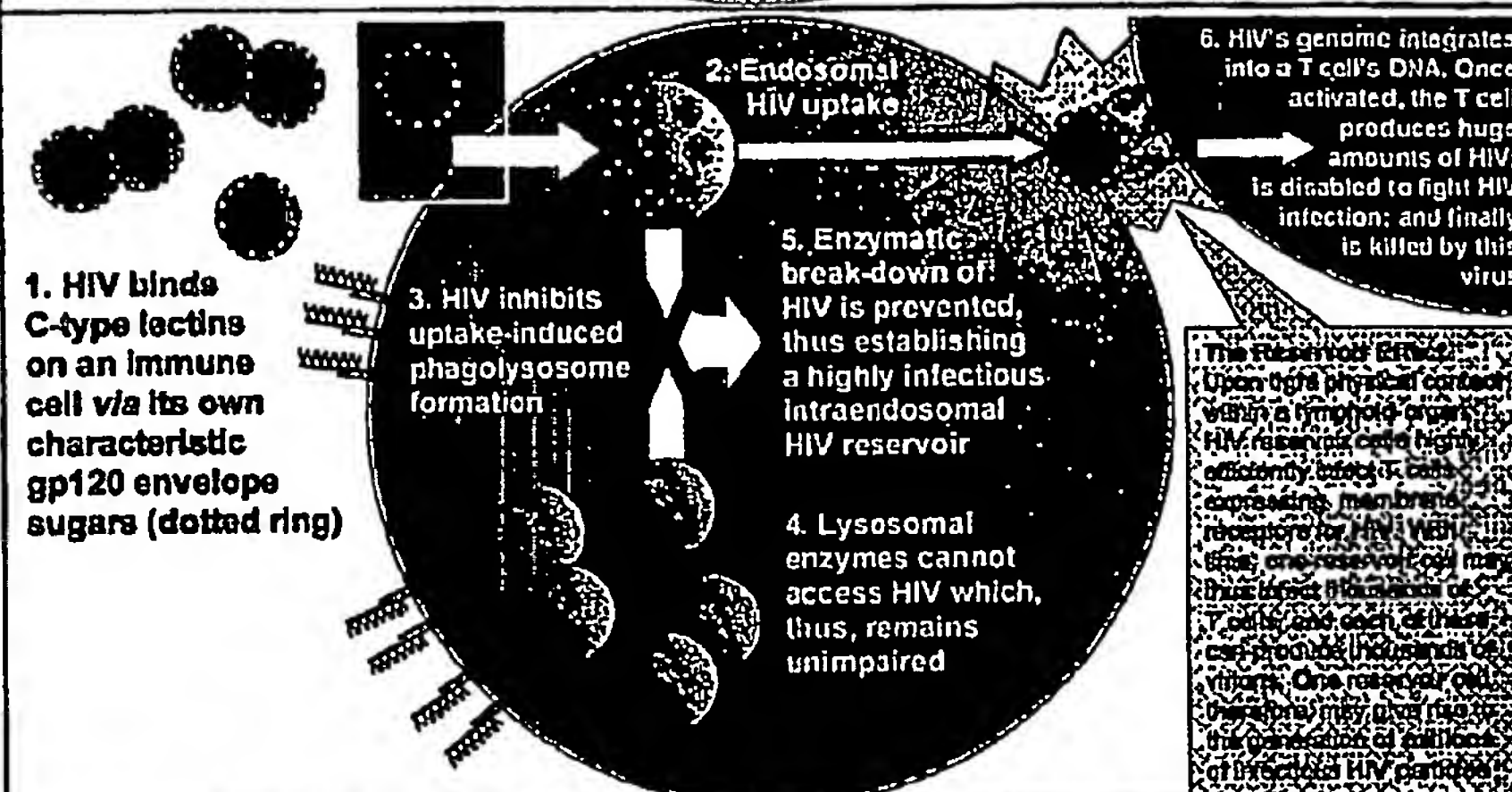
In the human immune system, the first cells recognizing infectious agents are antigen-presenting cells (dendritic cells, macrophages, and others). Normally, these cells digest and dismantle infectious agents presenting their fragments to T cells for induction of specific immunity. The large circle represents such a cell, as well as key processes involved in the recognition and destruction of infectious agents. The cell section on the upper right depicts a T cell instructed for action.

**II. Evasion of Destruction by HIV and Formation of a Chronic HIV Reservoir**

HIV reservoir populations can retain highly infectious virus for prolonged, yet different periods of time, i.e.,

- Days to months (dendritic cells);
- Months (follicular dendritic cells);
- Months to years (macrophages);
- Years (T-memory cells)

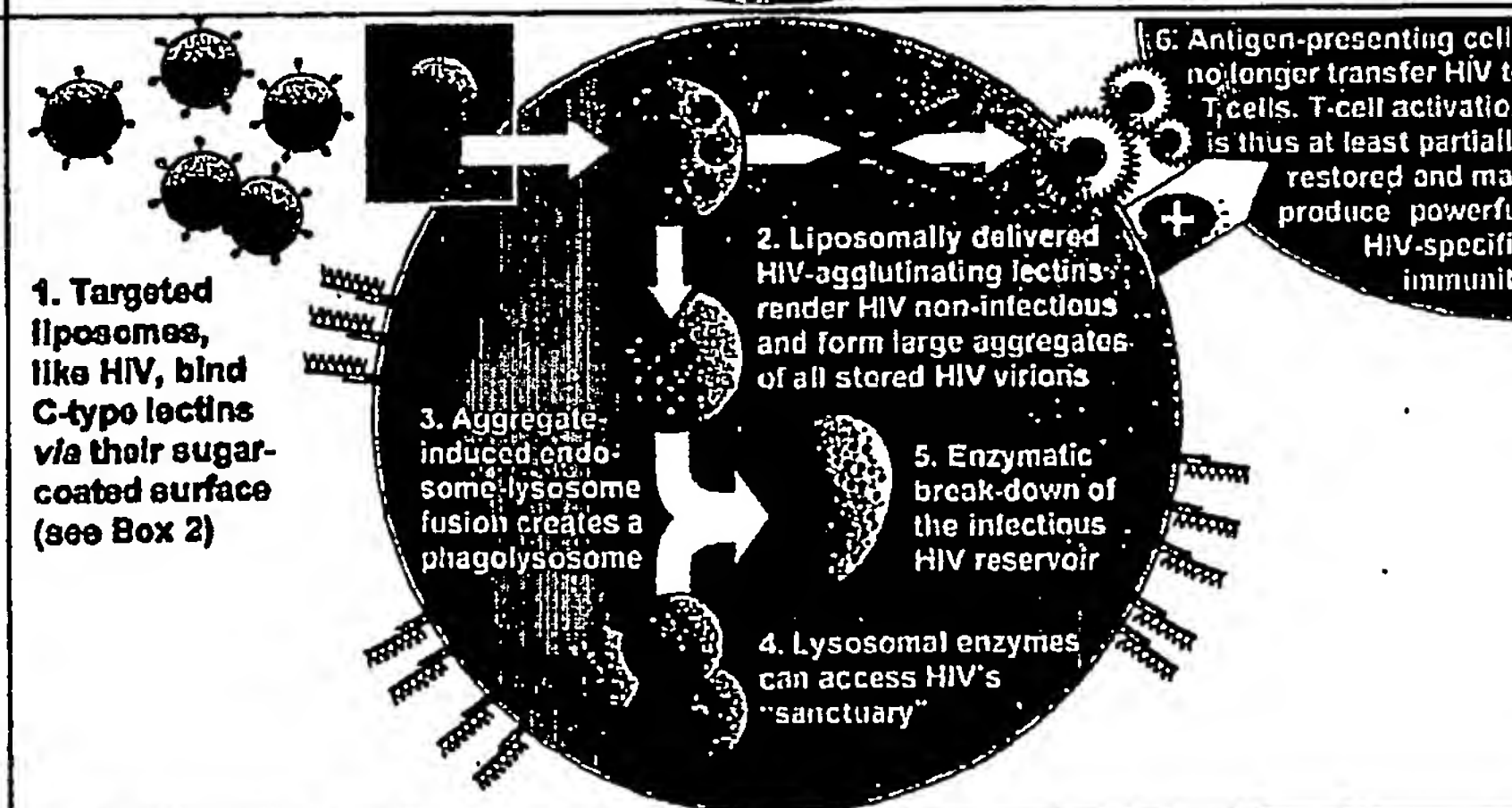
Dendritic cells, with their high turnover rate, their many physiologic subsets, and their extremely tight and frequent physical interaction with T cells, strike as the most virulent HIV reservoir when compared to the other reservoir cells.

**III. Elimination of the HIV Reservoir: a Two-Step Process Mediated by Carbohydrate-Lectin Interaction****1st Level:**

Specific liposomal targeted delivery to the reservoir cell's surface lectins, with subsequent endosomal uptake of the liposomes;

2nd Level:

Delivery of liposomally encased HIV-agglutinating lectins into the endosomes leads to the break-down of the infectious endosomal HIV reservoir



Box 1: Cellular Targeting Structure
Carbohydrate (Sugar) Recognition Domain (CRD) of a C-Type Lectin

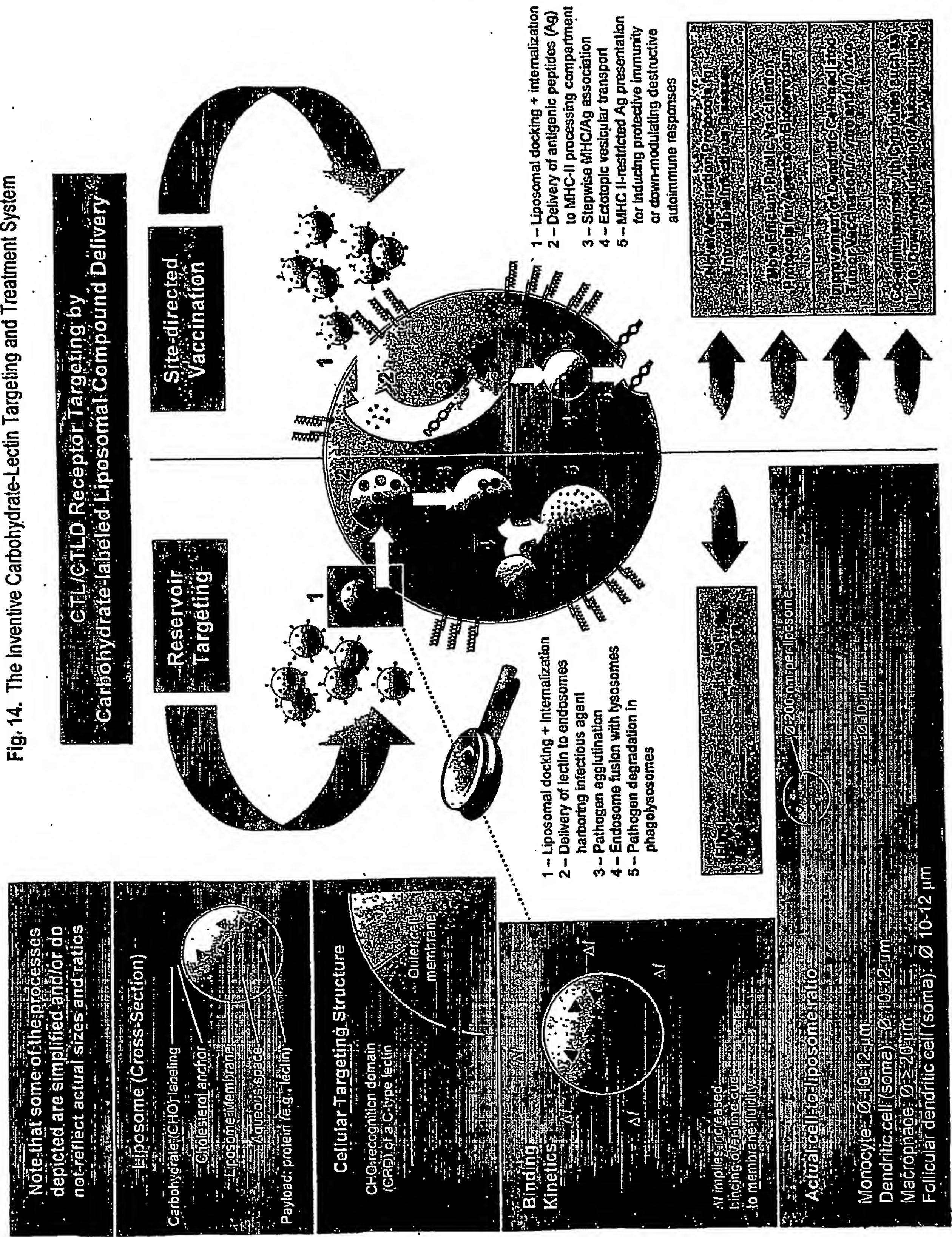
C-type lectin-like domains expressed by T-memory and NK HIV-reservoir cells also bear CRDs and thus can be targeted, too

Box 2: Liposomal Targeting & Delivery System

Carbohydrate (Sugar) Labeling
Cholesterol Membrane Anchor
Liposome Membrane
Aqueous Interior
Therapeutic Payload (Lectin)

Note that some of the processes depicted are simplified and/or do not reflect actual sizes and ratios

Fig. 14. The Inventive Carbohydrate-Lectin Targeting and Treatment System



**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record.**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☒ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☒ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.